Letters to the Editor

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THE ULTRAVIOLET ABSORPTION SPECTRA OF *o*-,*m*-,*p*-FLUOROBROMOBENZENES.

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In continuation of the work on the *o*,*m*,*p*-fluorochlorobenzenes (author, 1955, 56, 56), the ultraviolet absorption spectra of *o*-,*m*-,*p*-fluorobromobenzenes in the vapour state were investigated. There is no previous work on the ortho and meta compounds where as the para compound was studied in hexane solution by Conrod-Billroth (1936) and in the vapour state by Dima and Tintea (1940). The latter authors identified only three frequencies in the upper and none in the lower state.

The path lengths and temperatures employed in the present work are the same as in the earlier investigations. The general appearance of the spectra are quite similar to the corresponding fluorochlorobenzenes. The regions of absorption, the number of bands measured, the position of the 0,0 band, the prominent v, v separations and the nature of the electronic transitions giving rise to the discrete spectra are given in Table I. The excited and ground state frequencies, their correlation with the Raman data and the probable assignments are given in Table II. Details of the analyses will be published shortly.

TABLE I

Characteristic features of the ultraviolet absorption of *o*, *m*, *p*-FC_6H_4Br.

Region of absorption 1) Discrete 2) Continuous		Number of bands	0,0 band	Prominent v, v separations	Nature of the electronic transition
Ortho 2830–2450A	below 2150A	135	36985 cm^{-1}	83,131 cm^{-1}	$A'-A'$
Meta 2810–2430A	"	150	36963 cm^{-1}	81 cm^{-1}	$A'-A'$
Para 2900-2475A	"	190	36221 cm^{-1}	30 cm^{-1}	A_1-B_1

TABLE II

Ground and excited state frequencies of *o*-,*m*-,*p*-$FC_6H_5B_4$.

	Raman data $\Delta\nu$	Int	ρ	U. V. absorption data Ground state	excited state	Probable assignment
Ortho	(author 1956)				(author)	
	298	St Sh	.36	294	249 (w)	one of the ε^+_g components of benzene
	654	St Vsh	.16	656	599 (St)	C–Br stretching
	821	St Sh	.18	823	791 (Vst))	Totally symmetric carbon vibrations
	1026	St Vsh	.15	1028	942 (Vst)	
	1234	St Sh	.15	1244	1245 (ms)	C–F stretching
Meta	(author, 1956)					
	666	St Vsh	.11	668	607 (m)	C—Br stretching
	859	m d	.25	863	831 (ms)	
	1002	Vst Sh	.05	1004	962 (Vst)	Carbon ring breathing
	1056	St Sh	.02	1062	1001 (w)	
	1215	St Vd	.01	1229	1211 (mw)	C—F stretching
Para	(Nielsen et al. 1956)					
	290	Vst Sh	.30	276	251 (m)	One of the ε^+_g components of C_6H_6
	596	m Sh	.15	597	513 (mw)	C—Br stretching
	810	Vst Sh	.10	812	788 (Vst)	Totally symmetric C—C vibrations
	1066	Vst Sh	.40	1066	1016 (st)	
	1228	St —	.50	1235	1230 (ms)	C—F stretching

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